Amendments to the Claims

1. (Currently amended) A transgenic cell comprising a nucleic acid molecule ~~comprising a nucleic acid sequence~~ selected from the group consisting of:

i) a DNA molecule consisting of a DNA sequence as represented in ~~Figures 1a, 1b or 1c~~ SEQ ID NO: 1, 2, 3, or 4;

ii) a DNA molecule which hybridises to the sequences identified in (i) above and which encode a polypeptide which has fatty acid elongase activity; and

iii) DNA molecules consisting of DNA sequences that are degenerate as a result of the genetic code to the DNA sequence defined in (i) and (ii).

2. (Currently amended) ~~A~~ The cell according to Claim 1 wherein said nucleic acid molecule anneals under stringent hybridisation conditions to the sequences described in (i), (ii) and (iii) above.

3. (Currently amended) ~~A~~ The cell according to Claim 1 ~~or 2~~ wherein said nucleic acid molecules are isolated from an algal species.

4. (Currently amended) ~~A~~ The cell according to Claim 3 wherein said algal species is ~~selected from the group consisting of:~~ *Amphidinium carterae, Amphiphora hyalina, Amphiphora sp., Chaetoceros gracilis, Coscinodiscus sp., Crypthecodinium cohnii, Cryptomonas sp., Cylindrotheca fusiformis, Haslea ostrearia, Isochrysis galbana, Nannochloropsis oculata, Navicula sp., Nitzschia closterium, Pavlova lutheri, Phaeodactylum tricornutum, Prorocentrum minimum, Rhizosolenia setigera, Skeletonema costatum, Skeletonema sp., Tetraselmis tetrathele, Thalassiosira nitzschioides, Thalassiosira heterophorma, Thalassiosira pseudonana,* or *Thalassiosira stellaris.*

5. (Currently amended) ~~A~~ The cell ~~according to any~~ of Claim[[s]] 1[[-4]] wherein said polypeptide is a variant polypeptide and comprises the amino acid sequence ~~represented~~ shown in ~~Figure 2a, 2b, or 2c~~ SEQ ID NO: 5, 6, or 7 which sequence has been modified by deletion,

addition or substitution of at least one amino acid residue wherein said modification enhances the enzyme activity of said polypeptide.

6. (Currently amended) ~~A~~ The cell according to Claim 5 wherein said modified polypeptide has enhanced fatty acid elongase activity

7. (Currently amended) ~~A~~ The cell according to ~~any of~~ Claim[[s]] 1[[-4]] wherein said polypeptide comprises the amino acid sequence represented in ~~Figures 2a, 2b or 2c~~ SEQ ID NO: 5, 6, or 7.

8. (Currently amended) ~~A~~ The cell according to Claim 7 wherein said polypeptide consists of the amino acid sequence represented in ~~Figures 2a, 2b or 2c~~ SEQ ID NO: 5, 6, or 7.

9. (Currently amended) ~~A~~ The cell according to ~~any of~~ Claim[[s]] 1[[-8]]wherein said cell is transfected with a nucleic acid molecules selected from the group consisting of ~~nucleic acid sequences selected from the group consisting of~~:

i) a DNA molecule consisting of the DNA sequence as represented in ~~Figures 1a, 1b or 1c~~ SEQ ID NO: 1, 2, 3, or 4;

ii) DNA molecules which hybridise to the sequences identified in (i) above and which encode a polypeptide which has fatty acid elongase activity; and

iii) DNA molecules comprising DNA sequences that are degenerate as a result of the genetic code to the DNA sequence defined in (i) and (ii); combined with at least one of the nucleic acid molecules selected from the group consisting of:

iv) DNA molecules consisting of DNA sequences as represented in ~~Figures 3a, 4a, 5a or 6a~~ SEQ ID NO: 8, 10, 12, or 14;

v) DNA molecules which hybridise to the sequences identified in (i) above and which have desaturase, acyl-CoA synthetase or diacylglycerol acyltransferase activity;

vi) DNA molecules comprising DNA sequences that are degenerate as a result of the genetic code to the DNA sequence defined in (iv) and (v) above.

10. (Currently amended) ~~A~~ The cell according to Claim 9 wherein said cell is a plant cell.

11. (Currently amended) A plant comprising ~~a~~ the cell ~~according to any~~ of Claim ~~1-10~~ 9.

12. (Currently amended) A seed comprising ~~a~~ the cell ~~according to any~~ of Claims ~~1-10~~ 9.

13. (Currently amended) A foodstuff product comprising ~~a~~ the cell ~~according to any~~ of Claims ~~1-10~~ 9.

14. (Currently amended) ~~A~~ The foodstuff product ~~according to~~ of Claim 13, wherein said foodstuff is ~~selected from the group consisting of:~~ wine; beer; bread;, baking products ~~(e.g. bread, cake)~~; or vegetable extracts.

15. (Currently amended) ~~A~~ The food stuff according to Claim 13 wherein said foodstuff is wine or beer.

16. (Currently amended) A fermentation process comprising ~~a~~ the cell ~~according to any~~ of Claims ~~1-10~~ 9.

17. (Currently amended) ~~A~~ The fermentation process ~~according to~~ of Claim 16 ~~said process comprises the steps of~~ comprising:

~~i)~~ providing a vessel containing ~~a~~ the cell ~~according to the invention~~ and constituents required for fermentation and fatty acid biosynthesis; and

~~iii)~~ providing conditions conducive to the fermentation of ~~the~~ a liquid composition contained in said vessel.

18. (Currently amended) An animal feed product comprising ~~a~~ the cell ~~according to any~~ of Claims ~~1-10~~ 9.

19. (Currently amended) A method of modulating the level of n-3 fatty acid in a plant cell comprising;

~~i)~~ providing a plant cell according to Claim 10;

~~iv)~~ regenerating the plant cell into a plant; and

~~v)~~ monitoring n-3 fatty acid production by said plant.

20. (Currently amended) A method for the production and optionally the extraction of n-3 fatty acids comprising:

~~i)~~ providing a cell according to claim 1~~any of Claims 1-10~~;

~~ii)~~ providing conditions conducive to the growth of said cell; and

~~iii)~~ extracting n-3 fatty acids, or variants thereof, from said cell.

21. (Currently amended) A method for the production and optionally the extraction of n-3 fatty acid comprising:

~~i)~~ providing a plant cell according to Claim 10;

~~ii)~~ regenerating said cell into a plant; and

~~iii)~~ extracting n-3 fatty acids, or variants thereof from said plant.

22. (Currently amended) A reaction vessel comprising ~~at least one cell according to the invention~~ the cell of claim 1, fatty acid substrates and co-factors characterised in that said vessel is adapted for the conversion of said fatty acids substrates to n-3 fatty acids.